ADVANCE ADAPTERS INC.

P.O. Box 247, 4320 Aerotech Center Way
Paso Robles, CA 93447
Telephone: **(800) 350-2223** Fax: **(805) 238-4201**

P/N: 50-7906

New Item: (12/98)

Page Rev. Date: 06-24-02

NP231 SHORT SHAFT "FIXED YOKE" KIT

KIT CONSISTS OF:

No.	Qty	Part No.	Description
1.	1	51-7906	TAILHOUSING, DIECAST
2.	1	52-7905	SHAFT, MAIN OUTPUT
3.	1	300474	SEAL WASHER, REAR YOKE
4	1	300475	YOKE, C.V. REAR
5.	1	300476	NUT, REAR YOKE
6.	1	300480	SEAL WASHER, FRONT YOKE
7.	1	300625	RING GEAR, SPEED-O
8.	2	300627	SNAP RING, SPEED-O RING GEAR
9.	1	716075	PLUG FOR TAILHOUSING
10.	1	716076	SEAL WASHER FOR PLUG
11.	1	716318	BEARING, 207 OPEN BALL **(No Snap Ring)**
12.	1	716464	SNAP RING, 207 BEARING
13.	1	716465	RETAINER RING, MODE
14.	1	716751	SEAL, TAILHOUSING

INSTALLATION PROCEDURES:

Every effort has been made to make sure your kit fits and works right the first time. However, if you happen to experience a problem with your kit, please contact us by our toll free technical assistance line at (800)350-2223, Monday through Friday 8:00 a.m. to 4:00 p.m. PST.

The installation of this kit requires you to nearly disassemble the entire transfer case. If your transfer case is in need of a rebuild, now is the perfect time to do it. To install this kit, it is easier to remove your transfer case and set it on end upon a workbench, but it is not necessary.

Here are a couple of points to keep in mind that will make the installation much easier if you've never disassembled a New Process transfer case:

1. Keep all bolts, nuts, washers, etc. separated into groups as you remove them. Make sure you keep them in a labeled container that indicates what part of the transfer case they came from.
2. Keep all small parts in separate containers and label as to location and origin.
3. Make sure you have plenty of time and a clean, spacious area to perform the installation.

THINGS TO CONSIDER BEFORE YOU BEGIN:

1. This kit is shipped with a rear 1310 series C.V. type yoke. You will need a C.V. equipped driveshaft.
2. Medium strength threadlocker is recommended on all threaded fasteners.
3. A sealant such as RTV, (like the OEM sealant) is needed and is available from your local Jeep/Dodge dealer. P/N 82300234.

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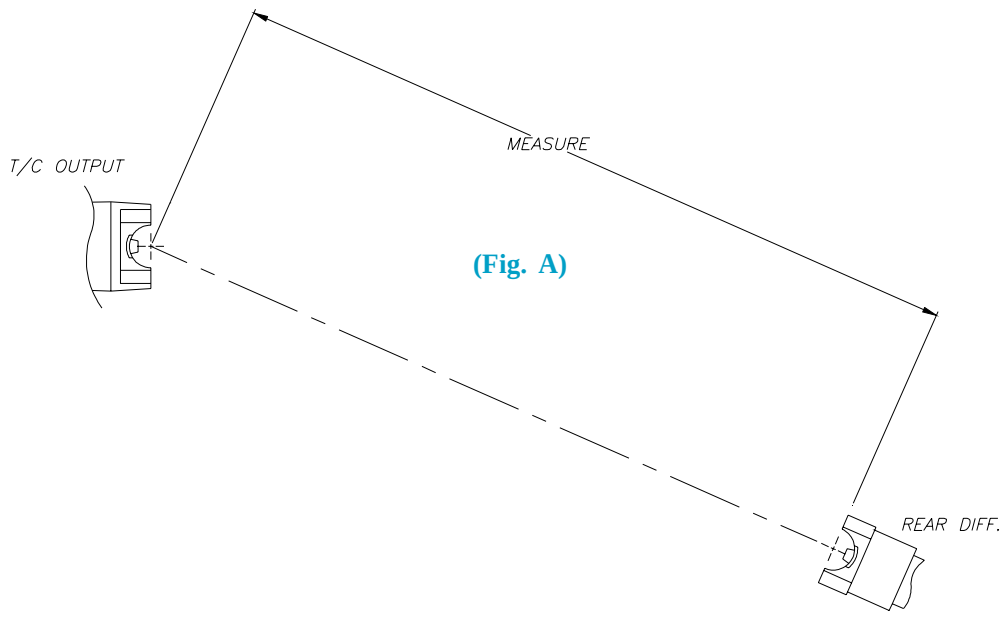
DRIVE SHAFT MODIFICATION:

This job should be performed by a local driveline repair shop capable of balancing the finished assembly. **(Use a C.V. joint & long slip spline style shaft assembly.)**

With the vehicle finished and on the ground, measure a straight line between the transfer case output yoke and the rear pinion yoke center mating flanges. **(Fig. A)**

Listed below are a few sources of driveshaft manufacturers & suppliers:

http://www.4xshaft.com
Tom Woods Custom Driveshafts 1-877-497-4238



(Fig. A)

For proper C.V. type drive shaft operation, the rear differential should be pointed at the transfer case output yoke under normal driving load.

If install is performed on jack stands, make sure you have supported the vehicle well!

Place the transfer case range selector in the 4L position.

Remove front & rear drive shafts and begin at the disassembly procedures. **(Step 1, Fig. 1)**

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NP231 SHORT SHAFT "FIXED YOKE" KIT

DISASSEMBLY

(Fig. 1) Yoke Nut Removal

(1) Remove Speed-o-drive.
(2) Remove front yoke nut.
  (a) Move range lever to 4L position.
  (b) Remove front yoke nut with 1-1/8" socket using an impact wrench. **(Fig. 1)**
(3) Remove yoke. **Note:** If difficult, use a puller.
  (Discard seal washer).
(4) Remove selector lever. **(Fig. 2)**

(Fig. 2) Range Selector Removal

(Fig. 3) Slinger Removed / Harmonic Dampener

(5) Remove the output shaft boot. Spread band clamps with a Awl. Slide boot off.
(6) Remove slinger (this one is tough)! Good thing you won't need this later. **(Fig. 3)**
(6a) On newer transfer cases, Jeep used a harmonic dampener. The dampener has 3 tapped metric holes. By installing bolts into these holes, they will go through the dampener and press against the stock tailhousing, pressing the harmonic dampener off the output shaft.
(7) Remove stop spacer & snap ring. **(Fig. 4)**

(Fig. 4) Stop Spacer & Snap Ring Removal

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(Fig. 5) Rear Seal Removal

(8) Remove rear seal. Collapse with punch if needed. **(Fig. 5)**

(Fig. 6) Rear O.D. Snap Ring Removal

(9) Remove rear bearing retaining rings. **(Fig. 6)** & **(Fig. 7)**

(Fig. 7) Rear I.D. Snap Ring Removal

(Fig. 8) Rear Tailhousing Removal

(10) Remove tailhousing bolts with 10mm socket & remove tailhousing. **(Fig. 8)**

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(Fig. 9) Rear Case Half Removal

(11) Remove the rear case bolts. A 10mm 12 pt. socket is needed for the spline head bolt and a 15mm socket for the remaining bolts. **NOTE:** The two black oxide finished bolts are located at the case dowel positions and require a washer under them.

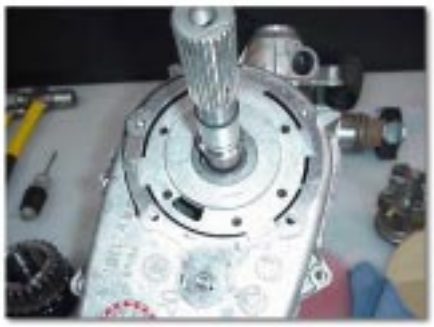
(12) Start to remove the rear case from the front case by inserting pry bars at the cast-in locations **ONLY!** **(Fig. 9)**

(a) Pry apart evenly to break the sealer bead along the case mating surfaces.

(13) **(Fig. 10)** The oil pump pickup tube is not accessible from the back of the case until the back half of the case has been taken off far enough to disengage the pump drive splines on the stock output shaft. At that time, you can either slide the pump up on the housing and remove the pump pickup tube or just remove the pump and pickup tube complete with the rear case half.

(a) Inspect the pickup tube "o-ring" in the pump and replace if needed. The same goes for the front shaft seal in the pump. **Do NOT** disassemble the pump; it is not a serviceable item.

(b) Remove, clean and inspect the inner case for wear.



(Fig. 10) Oil Pump Removal

(Fig. 11) Front Drive Chain & Shaft Removal

(14) Front output shaft removal:

(a) Pull the front output shaft out of the front bearing. **(Fig. 11)**

(b) Slide drive chain off the rear output shaft and remove both shaft and chain for cleaning & inspection.

(15) Rear output shaft removal:

(a) Grasp the main shaft and remove the shaft, drive sprocket and mode hub assembly.

(Fig. 12) Front Drive Chain & Shaft Removal

(16) Output shaft disassembly:

(a) Remove the mode hub retaining ring with heavy duty snap ring pliers. **(Fig. 12)**

(b) Slide remaining components, mode hub & drive sprocket off shaft.

(17) This is as far into the case you need to go unless you find foreign material inside usually caused by a worn or stretched drive chain. You will need to be the judge.

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NP231 SHORT SHAFT "FIXED YOKE" KIT

New Process 231 transfer cases have used two types or styles of output shafts. The current style New Process output shaft started to be used in 1997 and is still being used. This newer style shaft eliminated the caged needle bearings in the drive sprocket.

We have designed our Heavy Duty fixed yoke output shaft kit with the most current design shaft found in the New Process 231 transfer case. Our shaft looks like the shaft below left - listed as "TJ" style. Jeeps having the earlier style output shaft, listed as "YJ" style, can use this kit by simply removing the caged needle bearing from the stock drive sprocket.

TJ style shaft ➡
Current NP231 shaft design and our kit design. No needle bearings required.

⬅ YJ style shaft
Early style NP231 shaft design. The caged needle bearing from the drive sprocket must be removed for proper installation on our output shaft.

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NP231 SHORT SHAFT "FIXED YOKE" KIT

New Shaft

ASSEMBLY CONSIDERATIONS

(Fig. 1A) Drive Sprocket Needle Bearings

(1) These bearings must be removed. Once the bearings are removed, clean the inside of the drive gear to make sure it is free of any type of debris.

On 1997 and newer transfer cases, the drive sprocket does not use caged needle bearings. If you have this newer style, then continue on to Fig. 3A (2).

(Fig. 2A) Pull the Needle Bearings Out

(Fig. 3A) New Main Output Shaft Assembly

(2) Main shaft assembly:

(a) Clean all components.

(b) Prelube all components with a quality assembly lubricant. **(Fig. 3A)**

(c) Slide drive sprocket into position.

(d) Slide mode hub into position.

(e) Install the retaining ring into position after the mode hub. **(Fig. 4A)**

(Fig. 4A) (Large) Retaining Ring Installation

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(Fig. 5A) New Main Output Shaft Assembly

(3) Output shaft and drive chain assembly:
- (a) Lubricate chain & shaft with ATF.
- (b) Insert main shaft assembly into the housed planetary assembly.
- (c) Install the drive chain onto the front output shaft.
- (d) Insert them into the bearing. Lift upward and tilt the shaft toward the main shaft to work the chain into position. **(Fig. 5A)**

(4) Make sure the mode spring is in place, seen in the middle. **(Fig. 5A)**

(Fig. 6A) Case Half Pre-assembly

(5) Rear case assembly:
- (a) With all components clean, install oil pump.
- (b) Seat the pickup tube into the pump "o-ring". **(Fig. 6A)**
- (c) Prelube the front output shaft bearing located in the rear case.

(6) Apply a thin film of sealant to the front case. Use a good RTV, like the OEM sealant, available from your local Jeep dealer. **(Fig. 7A)** P/N = 82300234.

(Fig. 7A) Thin film RTV Applied Prior to Mating Case Halves.

(Fig. 8A) Case Halves Assembled

(7) Assembly of case halves: **(Fig. 8A)**
- (a) Slide the pump & case into position.
- (b) If you have difficulty, check for possible problems. **DO NOT FORCE!** Mode fork rail extends through rear case!
- (c) Install all fasteners in their original positions. **(Black bolts at dowel locations!)**
- (d) Torque evenly to 27-34 N.m (20-25 ft./lbs.)

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(Fig. 9A) Speed-o- Ring Gear Install

(8) Assemble speed-o-drive
- (a) Install retaining ring, located just behind the pump.
- (b) Slide ring gear into position.
- (c) Install retaining ring behind ring gear. **(Fig. 9A)**

NOTE: On some NP231 transfer cases, the shift rail must be shortened. This shift rail protrudes out of the transfer case and goes into the tailhousing. The new tailhousing has a pocket depth of 1.125".

Shift your transfer case into 4WD so the shift rod is protruding the furthest out of the transfer case. If this shifter rod protrudes more than 1" out of the back side of the transfer case, then the shift rail must be shortened. Ideally the shift rod should protrude exactly 1".

Transfer cases that will normally require this rail to be shortened measure 1.5" (photo above left).

Using a hack saw or cutoff wheel (and safety glasses), trim the shift rail shaft so that it protrudes only 1" (photo above right).

This kit is designed for both the Cherokees and Wranglers. The Cherokees use a vacuum actuator on the New Process tailhousing; our casting has this provision. On Wranglers, this threaded hole must be plugged. We have provided a plug and washer for this purpose. We also recommend that you use a bit of silicone to properly seal the plug.

(Fig. 10A) Bearing Installed and Retained with the 716464 Snap Ring

(Fig. 11A) Seal Installed

(10) Short Tailhousing Installation:
- (a) Prelube bearing & seal in new short tailhousing assembly. **(Fig. 11A)**
- (b) Apply sealant to tailhousing, mating surface of rear case. (thin film)
- (c) While supporting main shaft, slide new tail assembly into position.
- (d) Use care when indexing pump outer tabs and aligning tail assembly for installation. **(Fig. 12A)** **NOTE: Pull back on the output shaft to seat it against the rear bearing.**
- (e) Install the (5) 10mm bolts that retain the tailhousing and torque evenly to 20-27 N.m (15-20 ft./lbs.)

(Fig. 12A) Tailhousing Installation

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(Figures 13A) Final Installation

(11) Yoke & Seal Washer installation: (This will apply to both Front & Rear yoke assembly)
  (a) Slide the yoke seal into position on the shaft thread.
  (b) Lube the yoke as well as the seal with ATF.
  (c) A little trick to keep the spline seal in good shape is to slide the yoke half way on and walk the yoke into position with the retaining nut. Torque to 140-150 ft./lbs. with 1-1/8" socket.
  (d) Install your stock speedometer housing into the new tailhousing. Depending on which speedometer gear (tooth count) you are using will determine the proper rotation of the speedometer housing. Each housing has 4 possible rotation options. Identify you speedometer gear tooth count and locate that tooth count on your speedometer housing. The number range on your housing will need to be lined up with the housing retaining clip (see photo). A touch of RTV Blue silicon around the "o"-ring will help seal the housing to the tailhousing.
(12) Fill to recommended level with ATF.
(13) Reconnect all exterior items: driveshafts, 4WD switch, speedometer cable, etc.
(14) Happy Trails!

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